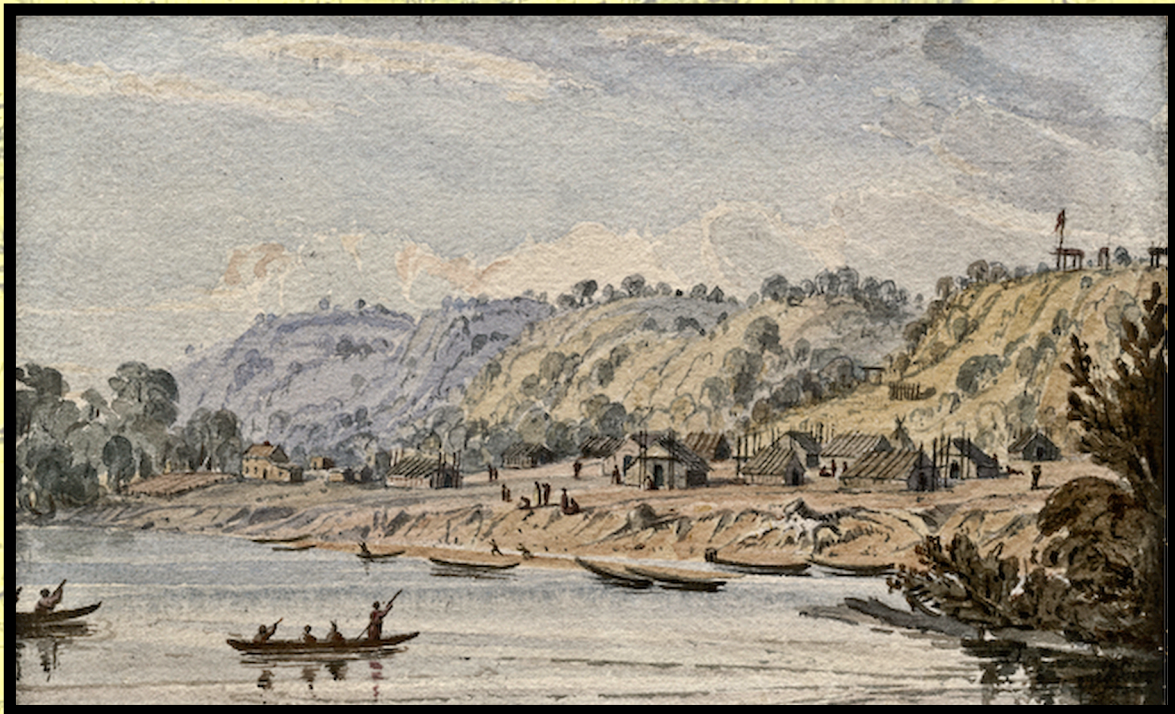


# MARITIME HERITAGE MINNESOTA



Ann Merriman  
Christopher Olson

## Minnesota Dugout Canoe Project 3 Report



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## Acknowledgments

Maritime Heritage Minnesota thanks the People of Minnesota for their support of the Minnesota Historical and Cultural Heritage Grant program, part of the Clean Water, Land and Legacy Amendment; without the MHCH Grant MHM received to conduct this work the project would not have gone forward. This follow-up to the Minnesota Dugout Canoe Projects 1 and 2 could not have been completed without the support of the following: Gail Lafave, Jean Pansch, Dan Karalus of the Beltrami County Historical Society, Sara Childers and Shirley Ecker of the Browns Valley Historical Society, Dan Cagley of the Minnesota Historical Society, Shirley Johnson, Deborah Wray, Richard Cordes, and Duane St. Mary of the Houston County Historical Society, and Dan Brosz of the South Dakota Historical Society. MHM acknowledges the efforts of Amanda Gronhvd and Bruce Koenen of the Office of the State Archaeologist. Lastly, MHM thanks our Board Members Steven R. Hack, Deb Handschin, and Chair Michael F. Kramer for their continued support.

Cover: Little Crow's Village on the Mississippi. MHM contends the majority of the canoes depicted here are dugouts due to the lack of sharply upturned ends shown. Watercolor by Seth Eastman (MNHS AV1991.85.33).



2016 Winner  
AASLH Leadership  
in History Award

***Maritime Heritage Minnesota has been awarded an American Association for State and Local History Award of Merit for our Minnesota Dugout Canoe Projects.***

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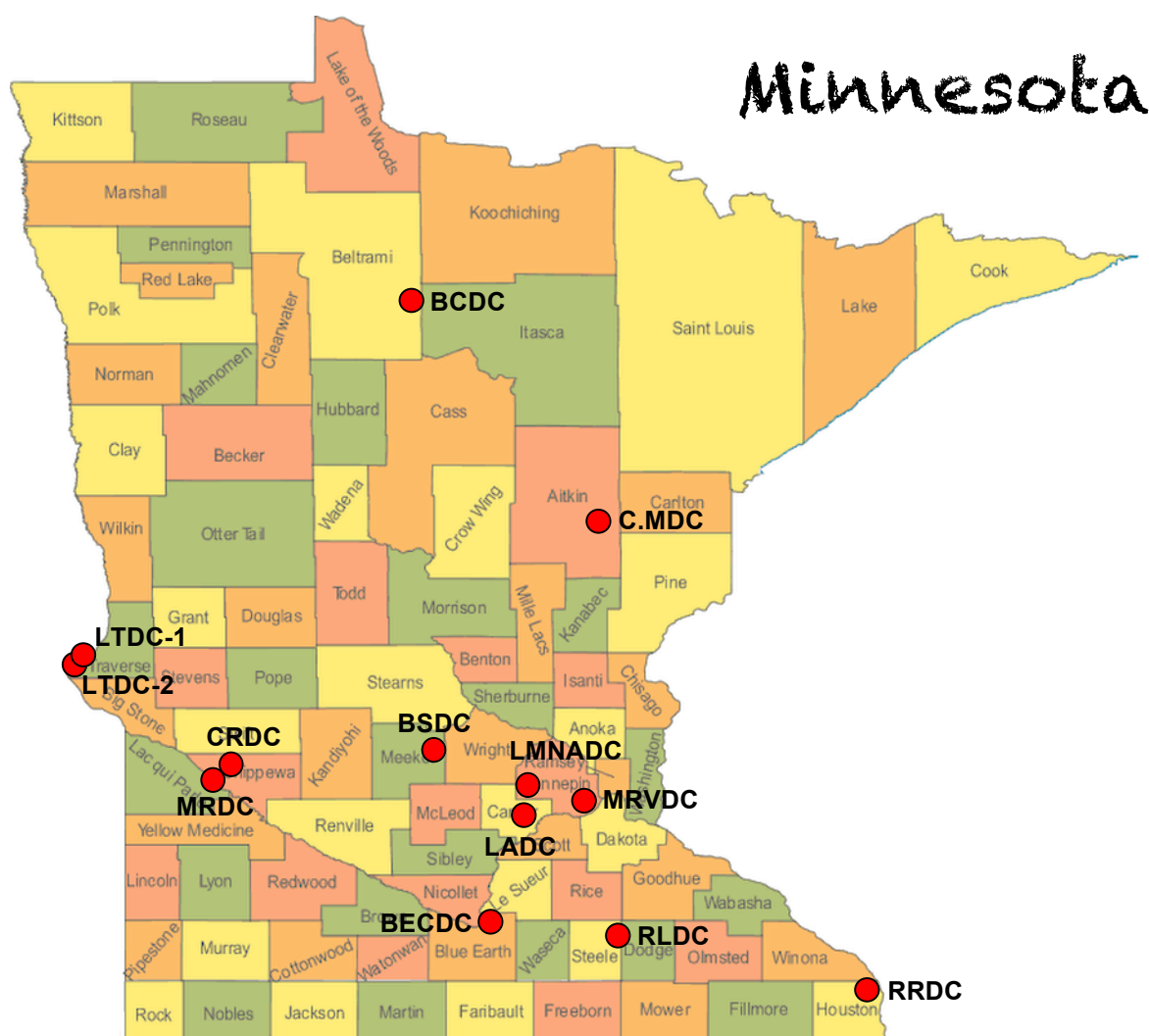
Ann Merriman, Christopher Olson, and Maritime Heritage Minnesota

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## Introduction

Maritime Heritage Minnesota (MHM) conducted the Minnesota Dugout Canoe Projects 1 and 2 (MDC-1, MDC-2) in 2013-2015. Those projects reported on 10 dugout canoes documented by MHM. The dugouts were measured, photographed, drawn, and small wood samples were taken for dating purposes. The samples were tested using Accelerated Mass Spectrometry to determine their probable ages by radiocarbon dating. The results allowed MHM to align the dugout canoes into a chronological series of Minnesota's oldest watercraft known at that time. However, three additional dugout canoes were located in Minnesota and these were documented and tested in April 2016; MHM also re-tested two canoes to confirm and refine the probable time periods of their construction.



**Geographic locations of dugout canoes that have been documented and studied by MHM.**  
**BCDC** (Beltrami Country Dugout Canoe), **C.MDC** (C. Maki Dugout Canoe, Dutch Lake), **LTDC-1** (Lake Traverse Dugout Canoe-1, Browns Valley Historical Society), **LTDC-2** (Lake Traverse Dugout Canoe-2, South Dakota Historical Society), **CRDC** (Chippewa River Dugout Canoe), **MRDC** (Minnesota River Dugout Canoe), **BSDC** (Big Swan Dugout Canoe), **LMNADC** (Lake Minnetonka North Arm Dugout Canoe), **MRVDC** (Minnesota River Valley Dugout Canoe), **LADC** (Lake Auburn Dugout Canoe), **BECDC** (Blue Earth County Dugout Canoe), **RLDC** (Rice Lake Dugout Canoe), **RRDC** (Root River Dugout Canoe).

## Research Design and Methodology

The Minnesota Dugout Canoe Project 3 (MDC-3) was designed utilizing successful techniques used during the MDC-1 and MDC-2 Projects. MHM received permission the holding institutions to take small wood samples from the canoes for dating purposes. MHM measured, drew, and photographed three dugouts: the Lake Traverse Dugout Canoe 1 (LTDC-1), the Lake Traverse Dugout Canoe 2 (LTDC-2), and the Root River Dugout Canoe (RRDC). MHM also conducted condition assessments of each artifact, collected accession data, and performed research in order to place the watercraft into their historical contexts. MHM took second wood samples from two previously documented and tested canoes, the Lake Auburn Dugout Canoe (LADC) and Beltrami County Dugout Canoe (BCDC), to determine if the 'modern' nature of both objects held up to a second test of wood from a different section of the watercraft. The five wood samples for radiocarbon dating were sent to the Beta Analytic lab in Florida for analysis. The dugout canoes studied during the MDC-1-3 Projects have no artifacts associated with them; any objects that may have been deposited with the watercraft were lost when they were removed from their contexts. Therefore, to utilize the radiocarbon data to its fullest extent, a brief historical overview of the 13 documented canoes will be presented to place the LTDC-1, LTDC-2, RRDC, and the re-examined BCDC, into their probable or possible contexts. MHM depends on historical sources and geographically and temporally associated archaeological resources to achieve this goal. MHM will analyze and describe the LTDC-1, LTDC-2, RRDC, and BCDC, and place them within the Minnesota dugout canoe chronology.<sup>1</sup>



Native American canoe use near Fort Snelling. Watercolor by Seth Eastman (MNHS AV1991.85.35).

<sup>1</sup>See MHM's *Minnesota Dugout Canoe Project Report* and *Minnesota Dugout Canoe Project 2 Report* for more information.



## Sample Collection and the Radiocarbon Dating of Dugout Canoes

During the documentation of the dugouts studied during the MDC-1-3 Projects, MHM used a small drill bit to create a hole 1/4 inch deep into the hull of each canoe and then used a smaller drill bit to deepen the hole into the wood. This way, the small bit would produce wood shavings clear of contaminants. Each sample collected was less than 100 mg in size and underwent Accelerated Mass Spectrometry radiocarbon dating tests at Beta Analytic Radiocarbon Dating Laboratory of Miami, FL. The results were presented to MHM on data sheets that listed the canoe's 'Conventional Radiocarbon Age' (CRA) in the form of a 'number of years  $\pm$  a number of years BP' (Before Present) or 'number of years  $\pm$  a number of years pMC' (percent Modern Carbon). In this context, 'Present' is the year 1950. Also provided were a range of '2 Sigma calibrated results' in the form of ranges of calendar dates that indicate the probability that a date range is the correct age of the sample. MHM re-calibrated the CRA data using the 2013 calibration database provided online by Oxford University (OxCal) to a 99.7% probability; this system also produced a median date range taking all the data into account. The calibrated calendar dates provided below represent the date range that have the highest probability of being correct within the technology available.



One of the wood samples dated using Accelerated Mass Spectrometry that measured the rate of  $^{14}\text{C}$  radiocarbon decay (Beta Analytic).

## Dugout Canoes Documented During the MDC-3 Project

### Lake Traverse Dugout Canoe-1

#### Browns Valley Historical Society and the City of Browns Valley, Browns Valley

MHM documented the Lake Traverse Dugout Canoe-1 (LTDC-1) housed at the Browns Valley Historical Society (BVHS) and owned by the City of Browns Valley on April 2, 2016. The canoe is double-ended, is 14.50 feet long, 2.30 feet in the beam, and currently has a .55-foot depth of hold. The vessel's gunwales are damaged along much of the hull and while both ends are fragmentary, enough survives to indicate the watercraft is double-ended. It has pointed ends that are rounded as they lead to the vessel's bottom, and are clearly thick and heavily carved regardless of the damage. One end is carved thinner and sharper than the end of the hull that is worn thin. This end is broader and rounder; it would be the stern if that distinction could be assigned to this artifact. The worn thin hull resulted in a jagged hole, and an additional hole is worn through the vessel on one side. Large cracks run down the centerline of the canoe, but are not worn through. The inner hull is smoothed from use, with only a few stone tool marks surviving. At the turn of the bilge the canoe flattens minutely, giving the watercraft a slightly wider base for stability when compared to a completely round-bottomed dugout. At some point since its discovery, the LTDC-1 was modified with metal straps and a metal plate to keep it from falling apart, including a thin curved piece at one end

attached inside the hull. MHM took a small wood sample from the bottom of the hull and it was radiocarbon tested. The LTDC-1 has a 2 Sigma calibrated calendar age of AD 1616-1689 ( $240 \pm 30$  BP) with a median date of 1663, placing it into the Late Prehistoric/Protohistoric to Early Historic Periods, spanning the pre-contact and early post-European contact eras. Lake Traverse lies within the borders of both Minnesota and South Dakota. It is the source of the Bois de Sioux River that widens into Mud Lake at one point, and finally into the Red River of the North.



Lake Traverse on the Minnesota-South Dakota border (USGS 1971, 1972a, c-d).



The Lake Traverse Dugout Canoe-1 (MHM).

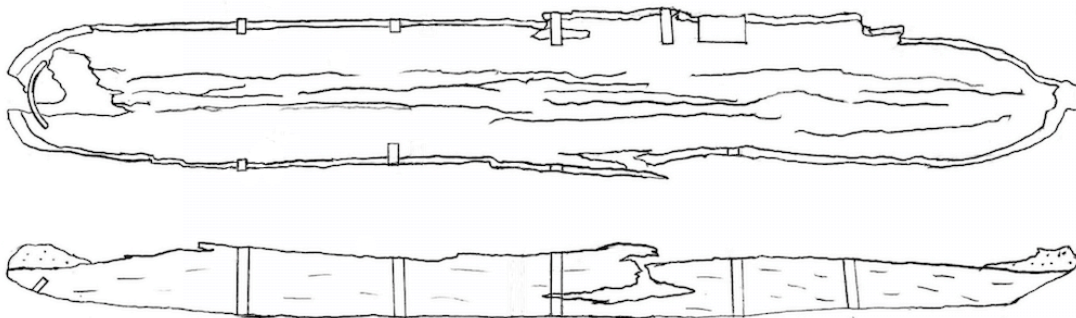




One end of the LTDC-1 is more complete (left) than the other end (right, MHM).



Determining the specific cultural affiliation of the LTDC-1 is problematic: 1. it could be from the Late Prehistoric, Protohistoric, or Early Historic Periods; 2. it was discovered in west central Minnesota where archaeological sites that date between 1600-1700 are few; 3. it lacks associated diagnostic artifacts. Further, the majority of the recognized Late Prehistoric sites in the Lake Traverse area have not produced artifacts that can be attributed to a specific Native American culture. An exception is the habitation site 21-TR-35/39-RO-45, located in both Minnesota and South Dakota at the southern tip of Lake Traverse. This large area contained pottery suggestive of the Sandy Lake Culture (AD 1000-1750). Another site with the field number 91-TR-10 also contained Sandy Lake pottery. Protohistoric sites dating between 1600-1800 in the Lake Traverse area are located in Ransom County in southeastern North Dakota, with no corresponding sites along the Minnesota border (Johnson 1991, 11-12, 19, 30). To compensate for the lack of archaeological information in this area, cartographic sources can fill in historical gaps. For example, contemporary maps have "indicated that the western Sioux [Dakota] were using the prairies in the Lake Traverse-Big Stone region along the modern-day Minnesota-South Dakota border by the mid-1680s" (Gibbon 2003, 222, note 9). Therefore, the possible cultural affiliation of the LTDC-1 could be the Prehistoric Sandy Lake Culture, the Protohistoric Dakota, or the Early Historic Dakota.



Top and side view sketches of the LTDC-1 (Christopher Olson).

If determining the cultural affiliation of the LTDC-1 proved difficult, tracing the history of the artifact's discovery and its circumstances after it was taken from the lake was challenging. Initially, when MHM documented the LTCD-1, it was believed the artifact was found in Big Stone Lake at the property and cottage owned by Dr. Irwin L. and Dorothea Oliver (Lots 16 and 17 of Section 33, Township 123, Range 48) at Sylvan Beach (Elaine Martig, personal communication, 25 May 2016; Shirley Ecker, personal communication, 2 April 2016). MHM located the Oliver's daughter Jean through a newspaper article and contacted her; she passed on MHM's letter to her older sister Gail. Gail confirmed for MHM that her grandfather, collector Dr. Clifford Oliver, found the LTDC-1 in Lake Traverse in 1937. In her possession, Gail has an inventory that chronicles Oliver's finds over the years. One entry reads "one oak canoe removed from bottom of Lake Traverse in 1937". Gail put forth the idea that a canoe could have been donated to the Runestone Museum in Alexandria, where the bulk of Dr. Oliver's collection is still housed. MHM contacted the museum and they have no dugout canoes in their collection. Gail also learned that another dugout canoe from their grandfather's collection might be in Wheaton, MN. Reportedly, a man named Tommy Bauer 'borrowed' a dugout canoe from the Oliver's garage and presented it to a museum in Wheaton decades ago. MHM contacted the Traverse County Historical Society in Wheaton and confirmed that there is no dugout canoe in their collection (Gail Lafave, personal communication, 3 and 6 June 2016; Jim Bergquist, personal communication, 4 June 2016; Clarence Juelich, personal communication, 10 June 2016).

At this point, MHM is confident that the LTDC-1 is the 'oak canoe' on Dr. Clifford Oliver's collection list. Further, this canoe may have been in Wheaton for some time and at some point, it may have been in the possession of George Ohland, the manager of the Land O'Lakes Creamery in Browns Valley. At some point, the dugout was moved to Sam Brown's Log Cabin museum in Browns Valley and then transferred outside, displayed under a canopy. In Autumn 2015, the BVHS moved the artifact into the basement of the Carnegie Museum in Browns Valley (Sara Childers and Shirley Ecker, personal communication, 2 April 2016), where MHM documented it and took a small wood sample from the hull. Considering the uncontrolled conditions the LTDC-1 has been stored in for several decades, and its probable movement around Traverse County, the canoe is relatively stable, regardless of the large cracks.

### **Lake Traverse Dugout Canoe-2** **South Dakota Historical Society, Pierre, SD**

MHM documented the Lake Traverse Dugout Canoe-2 (LTDC-2) housed at the South Dakota Historical Society (SDHS) in Pierre, SD on April 11, 2016. The canoe has two pointed ends, is 15.30 feet long, 1.83 feet in the beam, and has a .68-foot depth of hold. The vessel has intact gunwales amidships but it is damaged at both ends, and the surviving gunwales appear to have been painted white on the outer and inner hull. One pointed end is intact and rises higher than the other end that has been damaged. The damaged end has lost approximately 6 inches of wood that had been carved to a point on the top edge of canoe. The inner hull has a large crack along the bottom and a larger one at the turn of the bilge. MHM took a small wood sample from the bottom of the hull and it was radiocarbon tested using Accelerated Mass Spectrometry. The LTDC-2 has a 2 Sigma calibrated calendar age of AD 1784-1894 (130±30 BP) with a median date of 1822, placing it into the Contact and Post-Contact Periods of Minnesota's history. The



canoe was well-used during its working life, its inner surfaced smoothed to the point where no tool marks were evident. With this characteristic, the artifact was likely produced using stone tools because metal trade chisels leave much deeper grooves in worked wood, even after prolonged use.

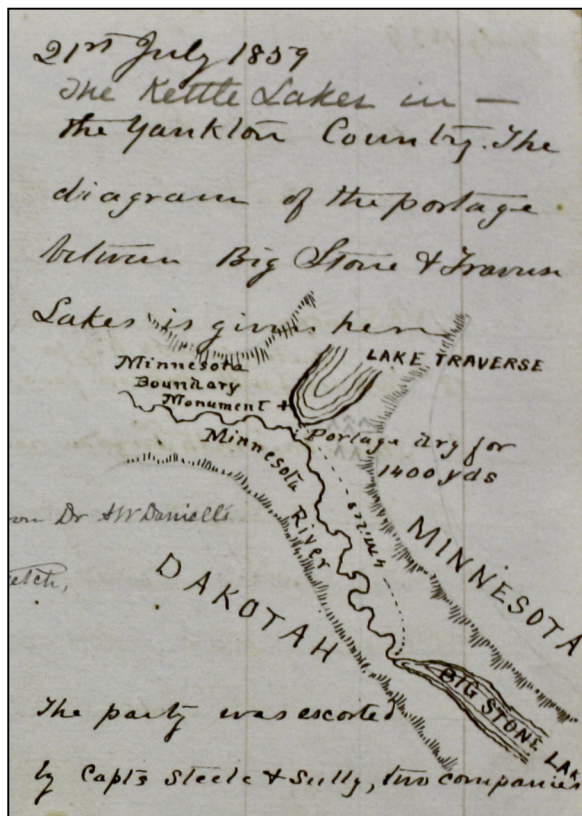


Lake Traverse Dugout Canoe-2 (MHM).



One end (left) of the LTDC-1 is nearly complete while the other (right) is missing the top section (MHM).

Regardless of the scarcity of diagnostic artifacts associated with Lake Traverse Contact and Post-Contact archaeological sites, MHM is confident the LCDC-2 was constructed and used by the Dakota - or a related - people. Specifically, this artifact may be linked to the Upper Sisseton group that spent time at Lake Traverse before 1836. Further, the Yanktonai and Yankton, groups ancestrally linked to the Dakota, were in the area of Dickson's Post during the middle 19<sup>th</sup> Century. Contact and Post-Contact archaeological sites have been identified on both sides of Lake Traverse. Robert Dickson's Post/Michilimackinac Company Trading Post (21-TR-a) is located on the shoreline of Lake Traverse southeast of Jensen Island. The Post was established around 1800 and the deserted remains of the business were still visible in 1886. Another site, Frenier's Post or Fort Washington, was part of the Columbia Fur Company and began operations in 1823. These and other sites reflect both Native American and non-native activity on Lake Traverse. Most of the Native archaeological remains consist of lithic and pottery scatters of undetermined age. However, it was reported "if we look at their canoes, their bows, arrows, pipes and pipe stems...we cannot find in them any evidence of deficiency in mechanical skill". This assessment of Dakota knowledge assists archaeologists to fill in gaps when artifacts are few or lack context. Further, a reference to "the huge cottonwood...used for the construction of their canoes" must refer to dugout canoes, since bark canoes were constructed of birch (Gibbon 2003, 84; Johnson 1991, 20-27; Leavenworth 1859a, Volume 2; *Minnesota Register* 1847; Seaberg-Wood 2014; *St. Paul Minnesota Pioneer* 1849).



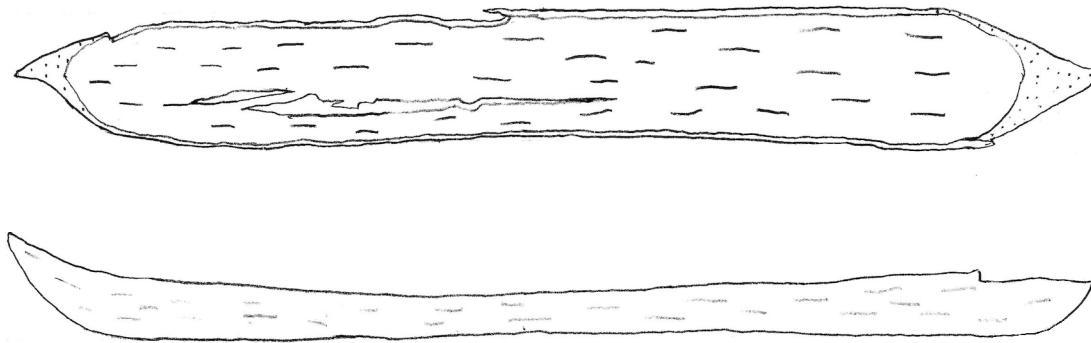
Left: In late July 1859, surveyor Frederick P. Leavenworth referred to Lake Traverse and Big Stone Lakes as 'Kettle Lakes' - lakes formed and filled in by glaciers. This page in his surveyor's book is loaded with historical information from the mention of Kettle Lakes, that the area is 'Yankton Country', the portage from Lake Traverse to the Minnesota River is noted, the border monument is marked, and the topography is drawn (Leavenworth 1859a).



Above Right: The October 1859 Snow and Hutton map that, like the Leavenworth example, shows the border monument. Helpfully, it also indicates the location of an 'Indian Village' partway between Lake Travers and Big Stone Lake, high on a bluff over the Minnesota River (Snow and Hutton 1859).



The LTDC-2 was discovered by William Jensen<sup>2</sup> in the early 1930s near an island, now known as Jensen Island, that lies within the South Dakota border. Reportedly, Jensen located two dugout canoes in Lake Traverse in the 1930s. Apparently, one of them was destroyed when it rotted in the elements, while the other was stored in the rafters of a garage. The artifact in the garage is LTDC-2; it was donated to the SDHC by Jensen's daughter and son-in-law in September 1998 (LTDC-2 Accession Information; OSA-b Site File). The exact location of the archaeological site where LTDC-2 was found is unknown; therefore, MHM cannot attain a Minnesota site number to associate with this dugout canoe. Regardless of the uncontrolled conditions that LTDC-2 has been stored in for decades, it is in stable condition.



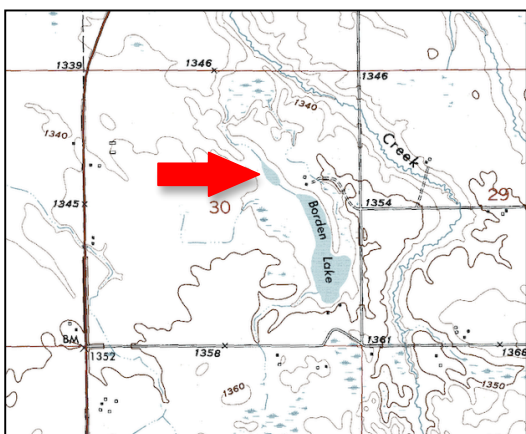
Top and side view sketches of the LTDC-2 (Christopher Olson).

### **Beltrami County Dugout Canoe** **Beltrami County Historical Society, Bemidji**

As part of a Minnesota Archaeology Week event, MHM documented and took a small wood sample from the Beltrami County Dugout Canoe (BCDC) at the Beltrami County Historical Society (BCHS) in Bemidji on September 20, 2014.<sup>3</sup> An informational card associated with the BCDC claims that "while the origin [of the canoe] is unknown, Arnold and Chris Peterson remember using it for hunting and fishing in the 1890's". The BCDC was found in a creek that ran out of the northwest end of Borden Lake in Hornet Township in Beltrami County in 1962 (BCDC Accession File). The radiocarbon test indicated the tree the BCDC was carved from was still living in the early or mid-1950s. This result contradicted MHM's interpretation of the artifact, particularly since the BCDC resembles the Minnesota River Dugout Canoe (see below) found in Chippewa County. Also, there are remnants of nine curved lines of sharp chisel marks throughout the inner hull at various intervals. These athwartships cuts were probably made so the wood between the chiseled lines could be split longitudinally and removed during the construction process. This process for dugout canoe construction was used in the Contact and Post Contact Periods after the introduction of metal tools to Minnesota's Native American population (Eastman 1914, 50-51). During the documentation of the BCDC, this information served as evidence that the canoe was constructed in the late 19th Century, at least.

<sup>2</sup> Jensen is known for finding Browns Valley Man, the oldest Native American remains in Minnesota.

<sup>3</sup> See MHM's *Minnesota Dugout Canoe Project 2 Report* for details.



The location of Borden Lake in Hornet Township in Beltrami County. The red arrow indicates the area where the BCDC was found (USGS 1972b).

All photos of the BCDC by MHM.



Left: The Beltrami County Dugout Canoe.



Chisel marks on the inner hull of the BCDC.

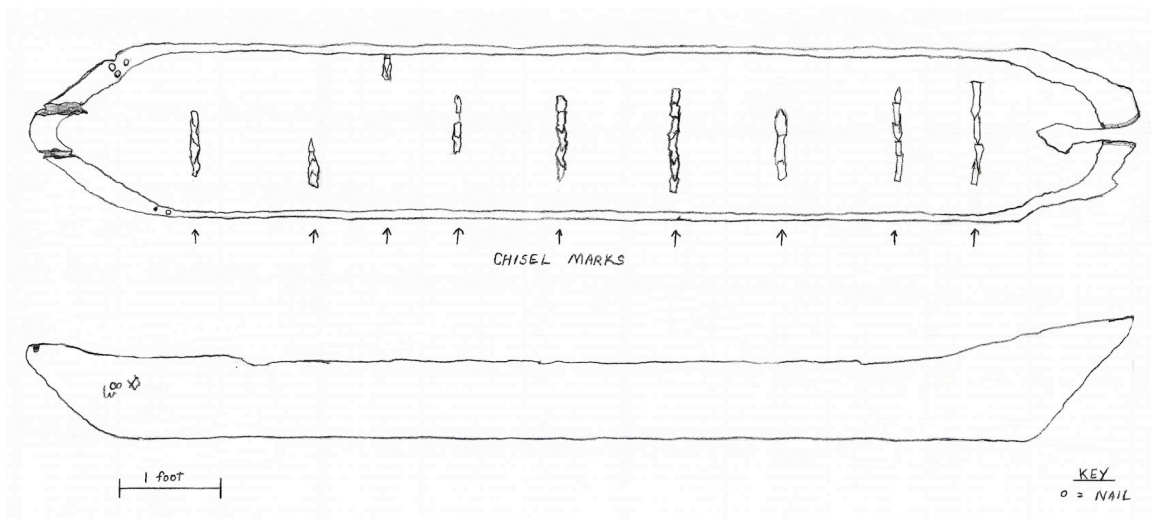


The heavy construction of the BCDC is seen here along with the hull marking.

MHM took another small wood sample from a different section of the BCDC on March 23, 2016. The new test concluded that the BCDC has a 2 Sigma calibrated calendar age of AD 1800-1900 ( $80 \pm 30$  BP) with a median date of 1846. These new results confirmed MHM's belief that Native Americans constructed the BCDC during the Post-Contact Period of Minnesota's history. Since the BCDC has no artifacts associated with



it, archaeological and historical references assist in assigning a probable cultural context to the artifact. However, the recognized Native American archaeological sites in Beltrami County date to the Prehistoric Period (OSA-a Site Files). MHM contends, based on the historic record, that the BCDC was made by people of the Ojibwe culture (Blegen 1963, 21-23). Further, it cannot be determined if the BCDC is the same watercraft reportedly used by the Peterson brothers in the 1890s; if this could be proven, the date range for this dugout canoe would change by a few years.



Top and side sketches of the BEDC. Note the chisel marks along the bottom of the inner hull (Christopher Olson).

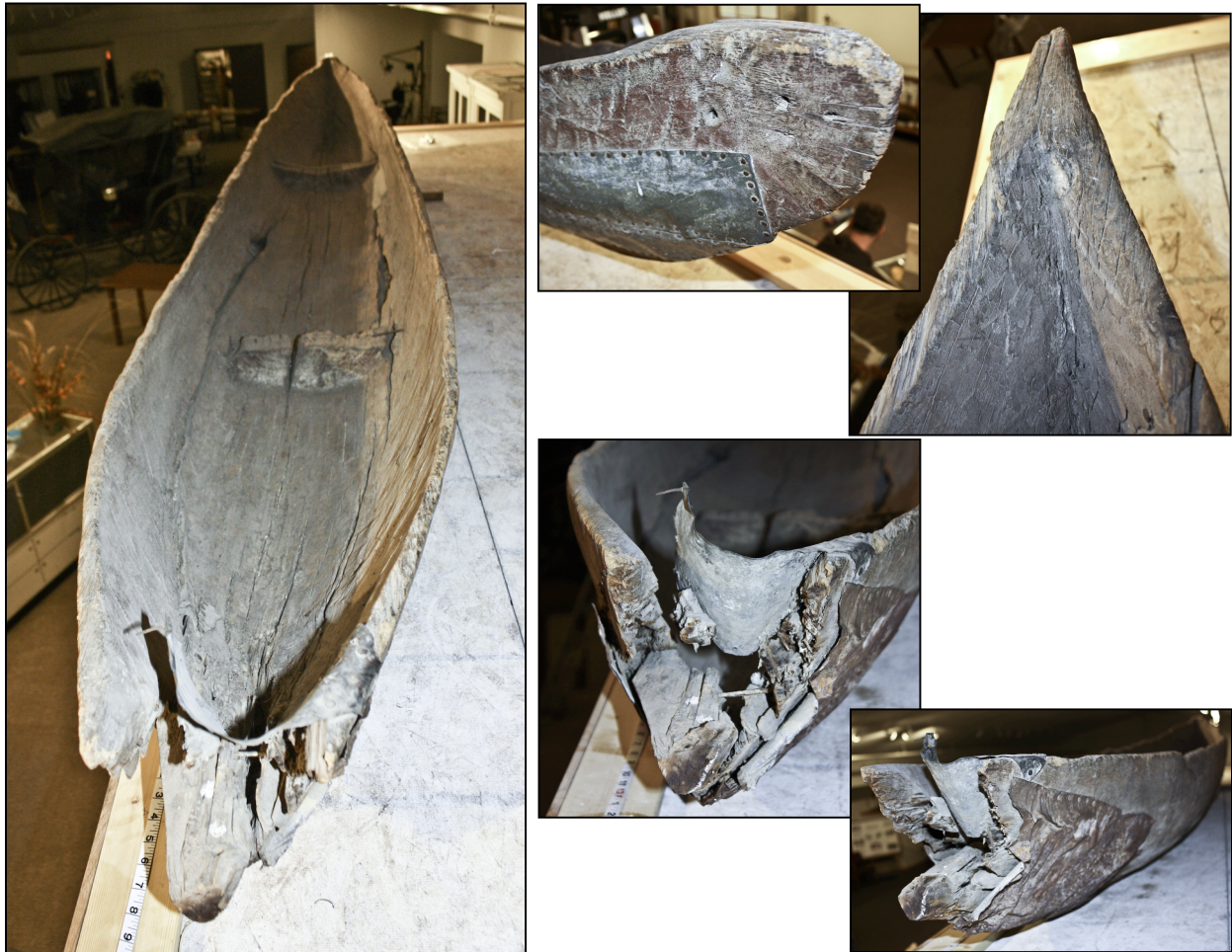
### **Root River Dugout Canoe** **Houston County Historical Society, Caledonia**

MHM documented the Root River Dugout Canoe (RRDC) at the Houston County Historical Society (HCHS) in Caledonia on March 30, 2016. The canoe has two pointed ends, is 12.94 feet long, 1.65 feet in the beam, and has a .75-foot depth of hold. The vessel has nearly intact gunwales that simply show signs of wear. One pointed end is intact and the other end has been damaged, with the upper section of the wood missing. The damaged end has lost approximately 6 inches of wood that had been carved to a point on the top edge of canoe. The RRDC exhibits two attributes not seen on any other Minnesota dugout canoe documented to date; two thwarts carved out of the body of the tree. These features would have strength to the watercraft and improve its stability on the water. The inner hull is smoothed from use, with stone tool marks surviving along near the gunwale in some areas. The hull has several large cracks along the bottom and both sides. At some point the RRDC was modified with metal plates on the outer hull that were sealed over the large cracks with short nails. In contrast to the LTDC-1, where metal straps were attached to the hull to prevent the dugout canoe's destruction, the metal plates attached to the RRDC were applied to the hull as repairs. The damaged end of the dugout has a wide curved metal piece attached on the inner hull surface that acted as a support and to strengthen the wood; it did not work. Not only has the wood broken away, but part of the broad metal plate has been broken off as well. MHM took a small wood sample from the bottom of the hull and it was radiocarbon tested. The RRDC has a 2 Sigma calibrated calendar age of AD 1805-

1905 ( $50 \pm 30$  BP) with a median date of 1875, placing it into the Contact and Post Contact Periods of Minnesota's history.



The Root River Dugout Canoe (MHM).

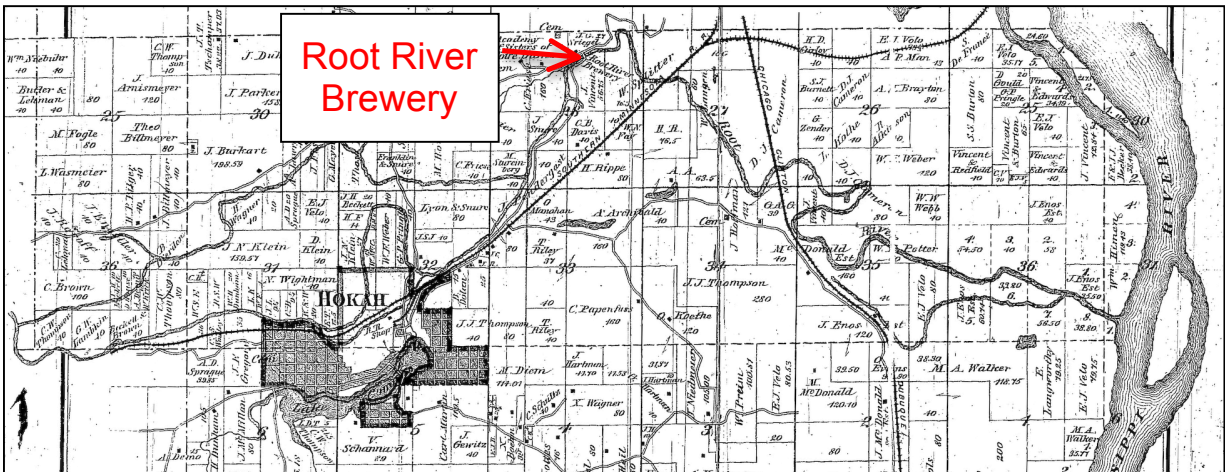


Several views of the RRDC showing the two incorporated thwarts, complete and damaged ends, and attached metal plates (MHM).

Residents of La Crescent, brothers Charles and Otto Dahlke, found this dugout canoe "lodged in driftwood in the bed of the Root River east of Hokah in 1905". More specifically, the artifact was located "downriver from the long since disappeared Root River Brewery". Charles Dahlke believed, even in 1905, that the RRDC "was very old. Holes in it had been patched with tin" (*Winona Sunday News* 1969). The defunct brewery was located about 3 river miles northeast of Hokah; this section of the river was cut off and the channel shifted a distance to the south sometime between 1916 and

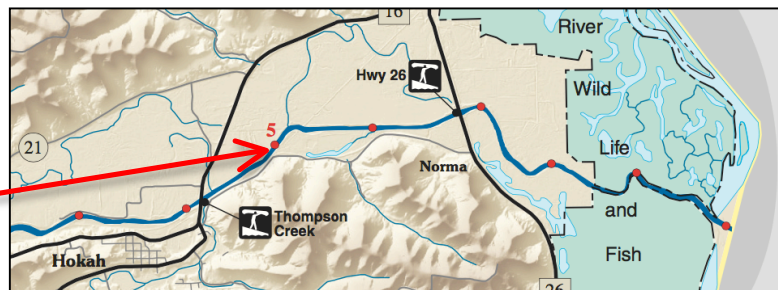


1931<sup>4</sup>. Therefore, the current location of the archaeological site where the RRDC was found is probably on dry land. Taking into account that the RRDC had been 'fixed' with tin sheets and nails prior to 1905 when it was found, MHM contends this dugout canoe was constructed by Native Americans, but it could have been used by either Natives or European Americans after its modification. The RRDC is currently in stable condition.



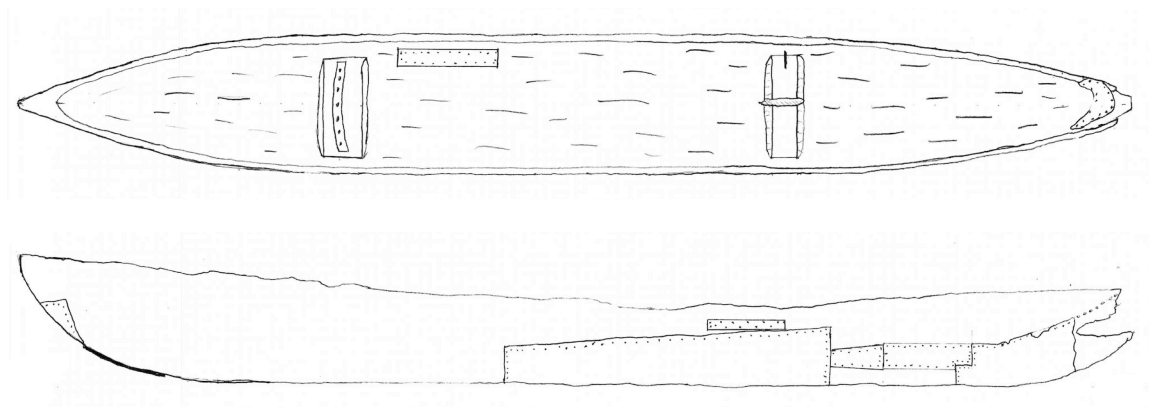
Above: An 1878 plat map of Hokah and the surrounding area. Note the location of the Root River Brewery; the RRDC was found downriver from the brewery (Warner 1878, 35).

Right: The route change of the Root River, cutting off the section where the RRDC was found (MSPTRU 2012).



Regardless of the lack of artifacts associated with the RDDC, MHM contends members of the Ho-Chunk (Winnebago) band along the Root River constructed and used the RRDC. In terms of specific bands in the 1842 Ho-Chunk census, those of Yellow Thunder, Winneshiek, Little Soldier, Big Thunder, and possibly Big Canoe's villages were reported on the Root River. Further, in 1844 there were four groups of Ho-Chunk living in villages on the Root River, including the bands led by Winneshiek and Big Canoe. In 1845, another Ho-Chunk settlement with unknown leadership was reported along the Root River as well. Like the Dakota of western Minnesota, it was observed that "whatever [the Winnebago] did or made, it was their aim to do everything well...if nothing more than the making of a moccasin, a ramrod, or paddle for a canoe (Curtiss-Wedge 1919, 109; Peterson and Stanley 2012, 57, 60-E61, 112). The majority of the recognized archaeological sites on the Root River are recognized as Pre-Contact scatters of ceramics, lithics, and bone. Site 21-HE-51 is an exception, with Post-Contact worked metal and cut nails discovered along with Woodland Period ceramics. Also, site 21-HU-165 contained Euro-American ceramics, glass, a railroad spike, and interestingly for maritime archaeologists and historians, dock and pier remains (OSA-c Site Files).

<sup>4</sup>Houston County plat maps dated 1916 and 1931 clearly show the difference in the river's flow as it heads toward the Mississippi River.



Top and side view sketches of the RRDC (Christopher Olson).



A drawing of a Native American in a canoe on the Minnesota River north of Redwood Falls (Leavenworth 1859b).

### **Lake Auburn Dugout Canoe Minnesota Historical Society #9827, St. Paul**

MHM documented and took a wood sample from the Lake Auburn Dugout Canoe (LADC) on January 10, 2014<sup>5</sup> and it has a calendar age of AD 1920-1933 (0±30 BP). This 'modern' date prompted MHM to re-sample the canoe on April 8, 2016 to either back up or negate this finding. The second radiocarbon test confirmed that the LADC is a forgery or replica, and not the Native American watercraft its 'finders' claimed. However, due to its age, the LADC it is an antique, and an example of a European American's perception a Native American dugout canoe's appearance.



The LADC after it was removed from Lake Auburn (MNHS HE5.19p18, digitized by MHM).

<sup>5</sup>See MHM's *Minnesota Dugout Canoe Project Report* for details.



## Minnesota Dugout Canoe Chronology

MHM has re-calibrated the radiocarbon results from the 8 other dugout canoes previously studied during the MDC-1 and MDC-2 Projects to further refine their probable ages. Presented here are the 13 known and documented Minnesota Dugout Canoes with their new date ranges, their probable cultural affiliations, and they are ordered chronologically from oldest to youngest.

### Lake Minnetonka North Arm Dugout Canoe (21-HE-438)

**West Hennepin History Center, Long Lake**

**Calendar Age: 930±30 BP**

**Re-calibrated Date: AD 1020-1210**

**Median Date: 1099**

**Previous Date: AD 1025-1165**

**Woodland Culture**



The Lake Minnetonka North Arm Dugout Canoe in its new exhibit (MHM).

**Big Swan Dugout Canoe (21-ME-37)****McLeod County Historical Society 88.2266, Hutchinson****Calendar Age: 900±30 BP****Re-calibrated Date: AD 1023-1225****Median Date: 1123****Previous Date: AD 1039-1210****Woodland Culture**

The Big Swan Dugout Canoe (MHM).

**Chippewa River Dugout Canoe****Chippewa County Historical Society 85.3.1, Montevideo****Calendar Age: 400±30 BP****Re-calibrated Date: AD 1426-1530****Median Date: 1478****Previous Date: 1436-1522****Woodland Culture, Possible Plains Village**

The Chippewa River Dugout Canoe in its new exhibit (Chippewa County Historical Society).



**Minnesota River Dugout Canoe (21-CP-72)**  
**Chippewa County Historical Society 1998-0483, Montevideo**  
**Calendar Age: 250±30 BP**  
**Re-calibrated Date: AD 1616-1685**  
**Median Date: 1655**  
**Previous Date: 1616-1679**  
**Mississippian Culture**



This Minnesota River Dugout Canoe (MHM).

**Lake Traverse Dugout Canoe-1**  
**Browns Valley Historical Society and the City of Browns Valley, Browns Valley**  
**Calendar Age: 240±30 BP**  
**Date: AD 1616-1689**  
**Median Date: 1663**  
**Prehistoric/Prehistoric Sandy Lake Culture/Protohistoric Dakota/Early Historic Dakota**



The Lake Traverse Dugout Canoe-1 (MHM).

**Blue Earth County Dugout Canoe**  
**Blue Earth County Historical Society 659.1, Mankato**  
**Calendar Age: 140±30 BP**  
**Date: AD 1665-1786 (No re-calibration)**  
**Dakota Culture**



The Blue Earth County Dugout Canoe (MHM).

**C. Maki Dugout Canoe (21-AK-bs)**  
**Cokato Museum 76.4, Cokato**  
**Calendar Age: 150±30 BP**  
**Re-calibrated Date: AD 1717-1890**  
**Median Date: 1789**  
**Previous Date: AD 1770-1830**  
**Ojibwe Culture**



The C. Maki Dugout Canoe (MHM).



**Minnesota River Valley Dugout Canoe**  
**Bloomington Historical Society 64-1, Bloomington**  
**Calendar Age: 130±30 BP**  
**Re-calibrated Date: AD 1784-1894**  
**Median Date: 1822**  
**Previous Date: AD 1790-1850**  
**Dakota Culture**



The Minnesota River Valley Dugout Canoe (MHM).

**Lake Traverse Dugout Canoe-2**  
**South Dakota Historical Society, Pierre, SD**  
**Calendar Age: 130±30 BP**  
**Date: AD 1784-1894**  
**Median Date: 1822**  
**Dakota Culture**



The Lake Traverse Dugout Canoe-2 (MHM).

**Rice Lake Dugout Canoe**

Dodge County Historical Society 90.23.1, Mantorville

Calendar Age: 130±30 BP

Re-calibrated Date: AD 1784-1894

Median Date: 1822

Previous Date: AD 1790-1850

Dakota Culture



The Rice Lake Dugout Canoe (MHM).

**Beltrami County Dugout Canoe**

Beltrami County Historical Society, Bemidji

Calendar Age: 80±30 BP

Re-calibrated Date: AD 1800-1900

Median Date: 1846

Previous Date: AD Mid-1950s

Ojibwe Culture



The Beltrami County Dugout Canoe (MHM).



**Root River Dugout Canoe**  
**Houston County Historical Society, Caledonia**  
**Calendar Age: 50±30 BP**  
**Date: AD 1805-1905**  
**Median Date: 1875**  
**Ho-Chunk Culture**



The Root River Dugout Canoe (MHM).

**Lake Auburn Dugout Canoe**  
**Minnesota Historical Society #9827, St. Paul**  
**Calendar Age: 1920-1933**  
**Forgery or Replica**



The Lake Auburn Dugout Canoe (MHM).

## Conclusions

To more fully understand the cultural and archaeological information the LTDC-1, LTDC-2, BCDC, and RRDC provides, it is helpful to analyze and compare them with the other 9 known dugout canoes in Minnesota. The 13 documented Minnesota dugout canoes were constructed and used by possibly 7 Native American cultures (and one European American example), span nearly 1,000 years of Minnesota Maritime History, and were used on waterways in 8 geographic areas. The two oldest canoes, the Lake Minnetonka North Arm Dugout Canoe (LMNADC) and Big Swan Dugout Canoe (BSDC), have carved ends that are bluff (rounded) with a soft chine. Further, a 1934 photograph of the LMNADC indicates that it probably had a definite bow and stern that are suggestive of the next oldest canoe, the Chippewa River Dugout Canoe (CRDC). The current condition of the LMNADC does not reflect this similarity, but it appears that one end of the inner hull was wider and more bluff, like the CRDC. The CRDC's ends exhibit what could be called partially-hard chines – not hard (sharp) but not rounded – a kind of intermediate form. The design of this canoe clearly suggests a bluff and wider stern coupled with a defined pointed bow. Moving on to the next oldest dugout, the Minnesota River Dugout Canoe (MRDC), both its pointed ends are similar to the bow of the CRDC, although the ends are carved more thinly resulting in a lighter canoe. However, the MRDC does not exhibit a hard chine at either end, and this attribute is suggestive of the construction of the LMNADC and the BSDC. The bow design of the CRDC – pointed with a defined somewhat hard chine – would allow the watercraft to move more swiftly through water since there was less drag from the submerged section of the bow. The fact that this trait was not incorporated into the MRDC is curious, with one explanation being that its maker was less-skilled than the CRDC's maker.

The LTDC-1 is contemporary with the MRDC but a comparison of the construction attributes of one watercraft with the other is difficult due to the damage to the Lake Traverse example. However, the fashioning of the more complete end of the LTDC-1 is suggestive of both ends of the MRDC. The Blue Earth County Dugout Canoe (BECDC) is the sixth oldest known watercraft in Minnesota, placing it after the LMNADC, BSDC, CRDC, MRDC, and LTDC-1 chronologically. The MRDC is Mississippian, the LTDC-1's cultural affiliation (Prehistoric Sandy Lake Culture, the Protohistoric Dakota, or the Early Historic Dakota) is unsure because of its geographic location, and the BECDC may be Late Mississippian or it may be early Dakota. A painting of a Dakota canoe by Seth Eastman strongly resembles the BECDC and there is a good argument for the dating of the canoe to the Early Contact Period. The fine carving of the BECDC's ends suggests that a skilled workman produced the artifact. After the BECDC in the chronological order come the C. Maki Dugout Canoe (C.MDC) and the Minnesota River Valley Dugout Canoe (MRVDC). Unfortunately, the ends of the C.MDC and the MRVDC have not survived and cannot be analyzed for comparison to the other dugouts.

The LTDC-2 and LTDC-1, even with over 100 years between them, are remarkably similar in design, although this fact might not be surprising since they were constructed and used on the same body of water. Also, the culture that produced both watercraft are probably the Protohistoric to Post-Contact Period Dakota, although the Prehistoric Sandy Lake culture cannot be ruled out in relation to the LTCD-1. The more complete condition of LTDC-2 may suggest what LTDC-1 would have looked like if it were in better condition. The Rice Lake Dugout Canoe (RLDC) clearly incorporates hard chines



on both ends and while either end could be used as the bow or stern, one end is a bit broader, suggesting the stern. The RLDC would have moved swiftly through the water with less drag than the other examples. Next, the re-testing of the BCDC re-ordered the chronological position of this artifact within the body of known Minnesota dugout canoes. The new test also reinforced MHM's interpretation that this watercraft was constructed in the 19th Century at the latest. MHM contends the BCDC was created by the Ojibwe culture using a construction technique described by Charles Eastman in 1914. Further, the BCDC is remarkably similar to the MRDC – with the exception of the chisel tool marks – regardless of the geographic, temporal, and cultural affiliation differences between the two artifacts. The last documented Minnesota dugout canoe linked to Native Americans, the RRDC, was probably constructed and used by members of a Ho-Chunk band. This 19th Century watercraft's design and construction is similar to the older dugout canoes LTDC-1, BECDC, and LTDC-2. However, the RRDC's integrated thwarts offer a new attribute not seen in other Minnesota dugout canoes that may be culturally or geographically unique.

Lastly, the 'modern' nature of the LADC has been re-confirmed with the second radiocarbon test. MHM contends the LADC classifies as a forgery or at best, a replica. The intent of its maker was to deceive anyone who found the craft into perceiving it to be an artifact and constructed by Native Americans. However, considering its age, it is now an antique and is a European American's 20<sup>th</sup> Century interpretation of the appearance of a Native American dugout canoe.

MHM is eager to document more dugout canoes and place them temporally, stylistically, and geographically into the system established through the comparison of the examples discussed here. The age of the artifacts, the attributes they exhibit, the geographic locations where they were discovered, and their condition further our knowledge about the people who constructed and used this earliest form of Minnesota waterborne transportation. The age ranges of the dugout canoes, AD 1020-1933, encompass nearly 1,000 years of Minnesota's Maritime History. Tool marks on both prehistoric and historic dugout canoes are tangible remnants of the production process, and their geographic locations can assist the archaeologist in determining the cultural background of their creators using radiocarbon dating. The information accumulated during this project builds upon earlier studies and will augment future research efforts.

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